



# Oklahoma Department of Transportation Mix Design Report

Asphalt Concrete, Type S4 (PG 64-22 OK) Mat'l. Code: asco012  
 (Material Full Name and Material Code)  
 Cummins Const Co P/S # m00556  
 (Producer/Supplier Name and Producer/Supplier Code)  
 Cummins Const Co (Coleman, OK) - 300TPH PLANT ID # m00556-11  
 (Plant Name and Plant ID)

Binder - Recycled ID: B2  
 (Design Type and Design Type ID)  
 WS4qc0101490900  
 (Mix ID)

Aggregate	Producer/Supplier	% USED
5/8" Chips	Dolese Co (Coleman, OK) P/S # m002710302	25
3/8" Chips	Dolese Co (Coleman, OK) P/S # m002710302	10
Man. Sand	TXI Mill Creek Stone Plant P/S # m005253504	24
Scrms.	Dolese Co (Coleman, OK) P/S # m002710302	8
Sand (Unlisted Source)	Cardinal Sand (Coleman, OK)	8
Fine R.A.P.	Contractor / Project Site P/S # Contractor	25

Warm Mix Asphalt (WMA) Technology: TEREX (Foaming Process) qual028 Terex Roadbuilding m00801  
 (Product Name, Material Code, Producer/Supplier Name, Producer/Supplier Code)

Asphalt Cement: Asphaltic Cement Type PG 64-22 OK, acem003, Valero (Ardmore, OK), m00352  
 (Material Full Name, Material Code, Producer/Supplier Name, Producer/Supplier Code)

Producer/Supplier:	Dolese Co (Coleman, OK) P/S # m002710302	Dolese Co (Coleman, OK) P/S # m002710302	TXI Mill Creek Stone Plant P/S # m005253504	Dolese Co (Coleman, OK) P/S # m002710302	Cardinal Sand (Coleman, OK)	Contractor / Project Site P/S # Contractor	Requires Form 93-E0 signed by the Department for production use. -Oklahoma D.O.T. Materials-				
	5/8" Chips	3/8" Chips	Man. Sand	Scrms.	Sand (Unlisted Source)	Fine R.A.P.	Comb. Agg.	JMF	Min.	Max.	% Tol. (±)
Sieve Size											
3/4 in (19 mm)	100	100	100	100	100	100	100	100	100	100	0
1/2 in (12.5 mm)	94	100	100	100	100	100	99	99	92	100	7
3/8 in (9.5 mm)	67	95	100	100	100	94	90	90	83	97	7
#4 (4.75 mm)	7	19	99	89	100	71	60	60	53	67	7
#8 (2.36 mm)	2	6	82	55	100	45	44	44	39	49	5
#16 (1.18 mm)	1	4	54	36	99	32	32	32	28	36	4
#30 (.600 mm)	1	2	30	27	99	25	24	24	20	28	4
#50 (.300 mm)	1	1	12	20	85	19	16	16	12	20	4
#100 (.150 mm)	1	1	4	15	33	13	8	8	5	11	3
#200 (.075 mm)	1.2	0.9	2.5	12.5	9.2	10.3	5.3	5.3	3.3	7.3	2
AC Content %						5.2	4.8	4.8	4.4	5.2	0.4

Warm Mix Asphalt (WMA) Additive % 2.0

Mix temperature @ discharge from mixer: 275 (135) ± 20 °F (± 10 °C) **Required**  
 Optimum roadway compaction temperature: 260 (127)  
 Laboratory mixing temperature: 300 (149)  
 Laboratory compaction temperature: 300 (149)

Tests on Aggregates	Required	Units
Durability Index	67	40 min. %
F.A.A. %U		N/A %
Flat and Elongated		10 max. %
Fractured Faces	100/100	85/80 min. %
Insoluble Residue	11.1	N/A %
LA Abrasion	22.3	40 max. %
Micro-Deval	12.4	N/A %
Permeability	9.3	12.5 max. 10 <sup>-5</sup> cm/s
Sand Equivalent	79	40 min. %
Pba	0.27	
IOC	0.72	%
Gse	2.767	
Gsb	2.747	
Specimen Weight	4900	g

Tests on Asphalt Cement Found  
 Specific Gravity @ 77 ° F 1.0100

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Tests on Compressed Mixtures (@ Design AC)			
	# Gyr.	% Density of Gmm	% Density Required
Nini	6	88.7	85.5 - 91.5
Ndes	50		96.0

Tests on Compressed Mixtures							
%AC	Gmb	Gmm	% Density of Gmm	% Density Required	% VMA	% VMA Required	% VFA
4.3	2.413	2.574	93.7	Design / Field	15.9	Design / Field	60.4
4.8	2.452	2.554	96.0	96.0 / 94.5 - 97.4	15.0	14.5 / 14.0	73.3
5.3	2.460	2.533	97.1		15.2		80.9

ITS (PSI) 208.2 N/A min.  
 TSR 0.82 0.80 / 0.75 min. (Design / Field)  
 Dust Prop. 1.3 Dust Prop. Req. 0.6 - 1.6  
 1.2  
 1.1  
 Compacted Wt. (lbs/sy/1" thick) = 112.3 @ 4.8 % Asphalt Cement  
 3.5 % New Asphalt Cement

Hamburg Rut Test Depth (mm) 1.84 12.50 max. @ 10,000 cycles

MEETS SPECIFICATION REQUIREMENTS PER SPECIAL PROVISION 708-26(a-f) 09

Comments:

Last Modified By: Schratwieser, Edward P. eschratw  
 (User Name and User ID)

Date: 3/14/2014  
 (mm/dd/yyyy)